

AMENDMENT TO THE CLAIMS

Following is a listing of all claims in the present application, which listing supersedes all previously presented claims:

Listing of the Claims:

1. (Currently Amended) A method for depositing a dielectric layer having a multi-layer structure on a substrate, comprising:

forming an oxidation barrier layer on a surface of a substrate;

forming a plurality of dielectric layers on the oxidation barrier layer,

wherein one of a plurality of additional oxidation barrier layers is disposed between each of the plurality of dielectric layers and an adjacent dielectric layer; and

diffusing material in each of the oxidation barrier layers into adjacent dielectric layers sufficient to alter at least one characteristic of each of the plurality of dielectric layers, wherein the material for each of the oxidation barrier layers is selected from the group consisting of groups III, IV, and V metals and oxides thereof and the diffusing includes diffusing the metal of the oxidation barrier layer into adjacent dielectric layers until none of an original metal compound remains in the oxidation barrier layer.

2. (Canceled).

3. (Currently Amended) The method as claimed in claim [[2]] 1, wherein the metals are selected from the group consisting of aluminum (Al), tantalum (Ta), titanium (Ti), hafnium (Hf), and zirconium (Zr).

4. (Currently Amended) The method as claimed in claim [[2]] 1, wherein the metal oxide is selected from the group consisting of aluminum oxide (Al_2O_3), tantalum oxide (TaO), titanium oxide (TiO_2), hafnium oxide (HfO_2), and zirconium oxide (ZrO_2).

5. (Previously Presented) The method as claimed in claim 1, wherein each of the oxidation barrier layers has a thickness of between about one to two orders of magnitude of Å.

6. (Original) The method as claimed in claim 1, wherein the thickness of each of the oxidation barrier layers is adjustable.

7.-9. (Canceled).

10. (Previously Presented) The method as claimed in claim 16, wherein the thermal process is performed at a temperature lower than about 700°C .

11. (Previously Presented) The method as claimed in claim 17, wherein the thermal process is performed at a temperature lower than about 700°C .

12. (Previously Presented) The method as claimed in claim 18, wherein the thermal process is performed at a temperature lower than about 700°C .

13. (Original) The method as claimed in claim 1, wherein each of the oxidation barrier layers is deposited by a chemical vapor deposition (CVD) method.

14. (Original) The method as claimed in claim 1, wherein each of the dielectric layers is deposited by an atomic layer deposition (ALD) method or a CVD method.

15. (Original) The method as claimed in claim 1, wherein each of the dielectric layers is formed of a material selected from the group consisting of strontium titanate (STO), barium titanate (BTO), barium strontium titanate (BST), lead lanthanum titanate (PLT), lead tantalum zirconium (PLZ), and strontium bismuth tantalite (SBT).

16. (Currently Amended) The method as claimed in claim ~~[[7]]~~ 1, wherein the diffusing comprises:

performing a thermal process on each oxidation barrier layer after adjacent dielectric layers are formed.

17. (Currently Amended) The method as claimed in claim ~~[[8]]~~ 3, wherein the diffusing comprises:

performing a thermal process on each oxidation barrier layer after adjacent dielectric layers are formed.

18. (Currently Amended) The method as claimed in claim ~~[[9]]~~ 4, wherein the diffusing comprises:

performing a thermal process on each oxidation barrier layer after adjacent dielectric layers are formed.

19. (Previously Presented) The method as claimed in claim 1, wherein the at least one characteristic of the plurality of dielectric layers is a lattice constant.

20. (Canceled).